CRUSHED STONE IN INDIANA

BY

JOHN B. PATTON

PRINTED BY AUTHORITY OF THE STATE OF INDIANA

BLOOMINGTON, INDIANA

APRIL 1949
STATE OF INDIANA
HENRY F. SCHRICKER, GOVERNOR

DEPARTMENT OF CONSERVATION
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BLOOMINGTON

REPORT OF PROGRESS NO. 3

CRUSHED STONE IN INDIANA

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JOHN B. PATTON

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**ILLUSTRATIONS**

Plate 1. Quarries producing crushed stone in Indiana... In pocket
INTRODUCTION

During the field seasons of 1947 and 1948, two field parties of the Division of Geology, Indiana Department of Conservation, examined, sampled, and mapped the quarries that are producing crushed stone in Indiana. In 1947 the parties were led by George E. Ericksen and the writer and in 1948 by Carroll N. Roberts and the writer. Field assistants for the first year were Robert Stewart and Dallas Fieandt. For 1948 field assistants were W. E. Taylor and Richard Erd.

Although the purpose of the survey was to study only active quarries, some inactive ones which seemed likely to resume operations were studied. Of the 92 quarries shown on the map (Plate 1), 89 were in operation during the time of the field examination, and 3 have since become active. These 3 quarries have not been sampled or mapped, but they have been located, and the geological formations from which they produce have been ascertained.

The samples are being analyzed by the chemical and spectrographic laboratories of the Division of Geology. A report containing comprehensive information on the limestone and dolomite resources of Indiana will be published when sufficient analyses are available to show regional chemical characteristics and variations of the formations. The report will include analyses of several other formations which have commercial potentialities but are not being exploited at this time. Active quarries are not properly distributed for a determination of the regional characteristics of some of the formations. In such cases, field parties will sample and examine the limestones in areas selected to fill out a well-spaced grid of control. These supplementary samples will be taken from natural outcrops, cuts, and abandoned quarries.
during the field season of 1950.

In the driftless area of south central Indiana and in most of the portions of southeastern and southwestern Indiana which are covered by Illinoian glacial drift, bedrock is close enough to the surface to permit economical stripping and quarrying. Between the outer border of the Wisconsin drift sheet and the lower portion of the area covered by the Champaign morainic system, major streams and some tributaries out through the glacial drift to bedrock and permit quarrying without excessive stripping. The quarries in Wayne, Rush, Shelby, Bartholomew, Putnam, Montgomery, and northwestern Decatur Counties (Plate 1) are within and near the margin of Wisconsin drift.

In northern Indiana overburden is thin only in the valleys of major streams and at a few places in the till plains. The operator therefore quarries limestone and dolomite where they are available and has little opportunity to select his quarry site from a wide range of possible locations. In the limestone areas of southern Indiana, however, potential quarry sites are numerous, and the quarry operator may select a location upon the basis of convenience, geographic advantage, stripping conditions, and character of the limestone.

The Silurian and Devonian formations in northern Indiana have not been precisely correlated with those in southern Indiana. The two areas have been treated separately in most geologic reports and are so treated here.

LIMESTONES QUARRIED IN SOUTHERN INDIANA

Saluda Limestone

The lowest stratigraphic unit from which crushed stone is produced in southern Indiana is the Saluda limestone. The only area in which it is
quarried is Dearborn County, where the Saluda is drab-gray, impure, dolomitic, thin-bedded limestone that contains thin shale beds. The formation is only 6 feet thick near Richmond and thickens southward to 50 feet near Madison (Cumings, 1908, p. 640), where it is massive Limestone.

**Whitewater Formation**

The Whitewater formation, which overlies the Saluda throughout Indiana, is rubbly, blue-gray, abundantly fossiliferous limestone that contains thin shale beds. Although most of the limestone is argillaceous, some beds are crystalline and fairly pure. The Whitewater is only a few feet thick near Madison but thickens northward to 80 feet near Richmond (Cumings, 1922, p. 438).

**Elkhorn Formation**

The uppermost Ordovician formation in Indiana is the Elkhorn, which overlies the Whitewater formation north of Riply County and thickens northward. Silurian rocks rest upon the Whitewater from northern Ripley County south to the Ohio River. The middle portion of the formation is gray, crystalline, thin-bedded limestone, which is quarried southeast of Richmond. The upper and lower parts of the formation consist of shale (Cumings, 1922, p. 438).

**Brassfield Limestone**

The lowest Silurian formation in most of southeastern Indiana is the Brassfield limestone, but the formation is absent in a small area south and west of Versailles. The Brassfield is typically salmon-colored, crystalline, unbedded limestone, desirable for crushed stone and agricultural lime but usually too thin to be quarried economically alone.
Osgood Formation

The Osgood formation, which overlies the Brassfield limestone, consists mostly of tan, dense limestone. Two beds of light-gray calcareous shale, 1 to 3 feet in thickness, are rather persistent and hinder economical quarrying. At present no quarries are operating entirely in the Osgood. Several quarries, mainly in the overlying Laurel limestone, apparently take some of the upper beds of the Osgood. The contact between the Laurel and Osgood is not easily established in a quarry, as both formations are sparsely fossiliferous and appear similar on fresh surfaces. The Osgood is more argillaceous than the Laurel and weathers to a yellow soft rock which is easily distinguished from the Laurel on old exposures.

Laurel Limestone

The principal source of crushed stone within the Silurian rocks of southern Indiana is the Laurel limestone. It is pale-tan to gray, dense, moderately dolomitic, thin-bedded, and in most places extremely cherty in the upper 5 to 20 feet. Throughout the formation thin bands of lenticular and nodular chert are common. The Laurel was once a noted source of dimension stone but is no longer quarried for this purpose. The Waldron shale normally overlies the Laurel, but in places all Silurian rocks younger than Laurel are missing, and Geneva dolomite (Devonian) rests directly upon the Laurel.

Louisville Limestone

The Louisville in Clark County is gray to buff, finely crystalline to dense, rubbly, dolomitic limestone, which contains many chain corals and is overlain south of Charlestown by the Jeffersonville limestone and north of Charlestown by the Geneva dolomite. Throughout its outcrop area the Louisville is underlain by the Waldron shale. The Louisville thins to the
north from 60 feet near Jeffersonville to about 10 feet in central Jennings County and farther north is absent in many places. In northern Decatur County the Louisville is represented by a few feet of light-gray, crystalline, thin-bedded fossiliferous limestone, which weathers pale-lavender or blue.

Geneva Dolomite

The basal Devonian formation in most of southern Indiana is the Geneva dolomite (Geneva limestone of Wilmarth, 1938, p. 810), which ranges in color from light-gray through tan and buff to chocolate-brown and contains white crystalline calcite masses. In the valley of the Flat Rock River in southern Rush and Shelby Counties, the formation is thin-bedded, but in central Jennings County and southward it is massive. The Geneva thins to the south and is absent nearly everywhere south of Charlestown in Clark County.

Jeffersonville Limestone

The Jeffersonville limestone rests on the Geneva dolomite from eastern Bartholomew County to southeastern Clark County. In extreme southern Clark County the Jeffersonville is the oldest Devonian formation and rests on the Louisville limestone. The Jeffersonville in its type section may be divided into a basal brown, coralline, dolomitic limestone; a middle gray to brown, dense to crystalline, fossiliferous limestone (Spirifer gregarius zone of Kindle, 1901, P. 539); and an upper tan, crystalline, massive limestone (Spirifer acuminatus zone of Kindle, 1901, p. 539). The basal coralline limestone is present wherever the basal Jeffersonville is exposed and occurs in Bartholomew County at the northernmost Jeffersonville quarry examined.

The middle limestone unit, characterized by Spirifer gregarius, becomes unfossiliferous northward from the type section. In Jennings and Bartholomew Counties the unit is replaced by beds of light-gray and tan, conspicuously and thinly laminated, dolomitic limestone that contain numerous
small calcite crystals and have an ashy or chalky appearance. In places the laminated beds are crumpled and
brecciated and are recemented with calcite and pyrite. The upper or *Spirifer acuminatus* limestone contains
abundant fenestelloid bryozoa in its upper bed and is present wherever the upper Jeffersonville crops out.

**Speed Limestone**

The Jeffersonville limestone is overlain from central Clark to central Jennings County by the Speed
limestone, which is blue-gray, crystalline, fossiliferous and argillaceous. The Speed is absent in southern Clark
County and in Bartholomew and northern Jennings Counties.

**Silver Creek Limestone**

The Silver Creek limestone, the natural cement rock of Clark County, is a drab-gray, argillaceous,
massive, fossiliferous limestone, which breaks with a conchoidal fracture and is cherty in the upper part. The
Silver Creek thins northward and is absent north of central Scott County.

**Beechwood Limestone**

Throughout southern Indiana the uppermost Devonian limestone is the Beechwood, which is gray,
hard, coarsely crystalline, fossiliferous, and contains abundant crinoid rings. The Beechwood rests
unconformably upon the Silver Creek, Speed, and Jeffersonville and underlies the Now Albany shale
throughout the area.

**Borden Reef Material**

The two upper units of the Borden group (Lower Mississippian) are the Floyds Knob
formation and the Edwardsville formation. Stockdale, 1931,
referred to crinoid bioherms that began to grow during the deposition of the Floyds Knob and continued during the Edwardsville. The “bioherms” have been described (Stockdale, 1931, p. 251) as “Irregular calcareous masses of variable size and distribution, built in considerable part by crinoids and in lesser degree by bryozoans, and completely surrounded by rock of different lithology . . . . ” Several of the reefs have been quarried, but only one, in Montgomery County, is now being worked. This exposure is isolated and is insufficiently exposed to reveal its position within the Borden group. It probably is in both the Floyds Knob and lower Edwardsville.

Harrodsburg Limestone

The upper portion of the Harrodsburg limestone (Warsaw limestone of Wilmarth, 1938, p. 2276) is gray, crystalline, massive, fossiliferous, and stylolitic. The lower part of the Harrodsburg consists of thin-bedded argillaceous limestone, bands of shale, thin layers of crystalline crinoidal limestone, and contains numerous geodes. The Harrodsburg is underlain by the Edwardsville formation and overlain by the Salem Limestone.

Salem Limestone

The famous Indiana building stone, a facies of the Salem limestone (Spergen limestone of Wilmarth, 1938, p. 2039) is soft, granular, fossiliferous, massive, cross-bedded limestone. The Salem in places is separated from the underlying Harrodsburg limestone by a few feet of platy shale or impure limestone. The lowermost beds of the Indiana building stone and the uppermost beds of the Harrodsburg are composed largely of fenestelloid bryozoas. The contact is difficult to identify if shale is absent. Above the building stone the Salem consists of brown, fine-grained, silty, argillaceous, dolomitic limestone, which emits a sulphurous odor from freshly
broken surfaces and is termed the "bastard stone."

The building stone in the Salem consists of small fossils and fragments of fossils cemented together. Although termed "oolitic" the Salem is not a strongly oolitic stone in most localities. The granular bodies are predominantly rounded fossil fragments and foraminifera. The building stone is one of Indiana’s principal reserves of high-calcium limestone.

St. Louis Limestone

The Salem is overlain by the St. Louis limestone, which is blue-gray, argillaceous, and thin-beded in its lower part. The upper part is tan to brown, dense, dolomitic limestone. Chart nodules and lenses are common, and at places the formation contains vugs lined with dolomite crystals. Local shale beds are present in the formation, particularly in the lower part.

Ste. Genevieve Limestone

The Ste. Genevieve limestone overlies the St. Louis limestone and has been divided into three members, named, in ascending order, the Fredonia, Rosiclare, and Levias. The Fredonia consists mostly of tan or gray, crystalline to dense, oolitic, thin-beded limestone but contains massive beds of extremely pure white oolite. The Rosiclare consists mainly of gray, thin-beded, oolitic limestone but contains shale beds and some sandstone. In many places the lime stone contains scattered send grains difficult to see without a lens. The Levias is predominantly light-colored, thin-beded, dense to crystalline, oolitic limestone and beds of massive white oolitic of high purity. The oolitic beds of the Levias and Fredonia are a major reserve of high-calcium limestone in Indiana. The uppermost bad of the Levias is a brown, rubbly, brecciated, dense limestone termed the "Bryantsville bed" by C. A. Malott (manuscript to be published, 1950) and marks the Meramac-Chester
contact, where the Aux Vases is absent. The relative thickness of the three members of the Ste. Genevieve ranges greatly within exposures in Indiana.

**Aux Vases Sandstone**

The lowermost formation of the Chester series of Mississippian rocks in Indiana is the Aux Vases sandstone, which consists of gray or green shale, sandy shale, sandy limestone, or sandstone. In some areas the Aux Vases has not been found, and the overlying Paoli limestone rests directly on the Ste. Genevieve. The Aux Vases, where it is sufficiently calcareous, is produced with the underlying or overlying beds but it is never quarried alone.

**Paoli Limestone**

The Paoli is tan, gray, or nearly white, dense to granular, oolitic limestone. At many exposures a bed of light-gray shale is present near the middle of the formation, and shale partings are common at bedding planes. The Paoli rests upon the Aux Vases or Ste. Genevieve and is overlain by the Mooretown sandstone.

**Beaver Bend Limestone**

The Beaver Bend limestone rests upon the Mooretown sandstone and is overlain by the Sample sandstone. The Beaver Bend is gray, oolitic, and crystalline. In most places it is not thick enough to be quarried alone but is quarried for crushed stone when encountered in stripping above the Paoli.

**Beech Creek Limestone**

The Beech Creek is brown or blue-gray, dense to crystalline, fossiliferous limestone that overlies the Elwren sandstone and underlies the
Cypress sandstone. Large crinoid stems with calcitic cleavage stand out on weathered surfaces and distinguish the Beech Creek from other Chester limestones.

Glen Dean Limestone

The Glen Dean limestone rests on the Hardinburg sandstone and is overlain by the Tar Springs sandstone. The lower half of the formation is hard, brown or gray, crystalline, massive limestone. The upper half generally is shale. Locally, erosion has removed part or all of the shale. Thin beds of limestone are usually present within the upper shale. Such beds are not of commercial thickness and are discarded as part of the overburden.

“Minshall Limestone” ¹

The “Minshall limestone” (Moore et al. 1944, pl. 1) is dark blue-gray, hard, fine-grained, siliceous limestone that commonly contains lenticular bands of blue chert several inches in thickness. The limestone is above the Minshall coal, from which it is separated by a bed of black shale. The Minshall limestone is the top of the Pottsville series of the Pennsylvanian.

“Maria Creek Limestone” ²

The “Maria Creek limestone’s” (Malott, 1948, p. 125) is gray to tan, dense to crystalline, hard, fossiliferous limestone that is approximately 75 feet above Coal VII. The limestone lies between beds of shale and is within the Conemaugh series of the Pennsylvanian.

¹No proper type section has been set up and described for the “Minshall limestone,” and the name has never been formally proposed.

²No proper type section has been set up for the “Maria Creek limestone,” and the name has never been formally proposed.
LIMESTONES QUARRIED IN NORTHERN INDIANA

Middle Ordovician Rocks

A deep seated disturbance in the earth's crust folded, broke, and elevated Middle Ordovician rocks to the surface in a small area in southern Newton County (Quarry No. 52, pl. 1). Shrock and Malott (1933, fig. 5) identified the limestone formations as the Stones River, Black River, and Trenton. The formations quarried near Kentland are limestone and dolomite of variable color and texture. A typical section or description cannot be given because the beds stand at high angles and are broken and faulted.

Mississinewa Shale

The lowest Silurian formation recognized at the surface in northern Indiana is the Mississinewa shale (Cumings and Shrock, 1927, p. 583). The formation is less homogeneous than most descriptions indicate. At most exposures the rock is blue-gray, argillaceous, dolomitic, silty, massive limestone which has conchoidal fracture and weathers to small rectangular blocks. In places the Mississinewa is gray calcareous shale. Interbedding of shale and limestone is not common. Cumings and Shrock (1928a, p. 62) state that all of the known Niagaran reefs “have their roots in the upper 100 feet of this formation.” Well samples show (Esarey and Biebermn, 1948, fig. 4) that a thick sequence of dolomite and limestone underlies the Mississinewa and overlies the Brassfield limestone. Exposures of the base of the Mississinewa have not been found. The formation is normally overlain by the Liston Creek limestone (also Niagaran) but at Kokomo and near Peru is overlain by Kokomo limestone (Cayugan).
Liston Creek Formation

The Liston Creek is gray, thin-bedded, dolomitic, cherty limestone and intercalated lenticular beds of chert. Chert is less abundant in the lower than in the upper part and in places is absent. Reefs, which apparently began in the Mississinewa, continued their growth into the Liston Creek.

Huntington Dolomite

The Huntington dolomite has been described (Cumings and Shrock, 1928a, p. 95) as “massive to slabby, evenly-bedded, yellowish, gray or pinkish, granular dolomite of sacchoroidal texture.” The existence of the Huntington as a formation has been questioned. Although dolomite identified as Huntington is exposed at numerous places throughout an area of more than 1600 square miles, the contact of the base of the Huntington on an older formation has not been observed. Many exposures termed Huntington are reefs or beds associated with reefs. Some reefs formerly called “Huntington” are now considered to be Liston Creek or even Mississinewa in age. Further investigation may move other “Huntington” reefs down into lower formations.

Identification of a Guelph fauna has furnished much of the basis for the existence of the Huntington as a formation younger than Liston Creek. The term New Corydon limestone was proposed (Cumings and Shrock, 1928b, p. 588) for “12 to 15 feet of brown, exceedingly nodular, cherty, slightly fossiliferous limestone (which) rest on Huntington dolomite with a sharp line of contact.” The New Corydon was determined to have a Lockport fauna, although it overlay rocks supposedly of Guelph age. Both fauna and lithology suggest that the New Corydon is a more dolomitic eastward facies of the cherty upper Liston Creek and that the even-bedded dolomite beneath it represents the lower non-cherty Liston Creek, more dolomitized than in Wabash
and Grant Counties.

In Adams, Jay, and Randolph Counties, thick massive dolomite and overlying thin slabby dolomite beds have been termed Huntington. Absence of Mississinewa in well samples (D. F. Bieberman, personal communication) from the area suggests that the beds may be surface exposures, of the unnamed subsurface beds overlying the Brassfield and underlying the Mississinewa (Esarey and Bieberman, 1948, fig. 4).

Thus it seems possible that the described exposures of the Huntington include unfamiliar aspects of beds distributed through several hundred feet and several formations within the Niagaran of northern Indiana.

Kokomo Limestone

The Kokomo limestone is gray to brown, banded dolomitic limestone, much of which is finely laminated. Although the Kokomo usually is described as argillaceous, analyses show little alumina. At Kokomo and near Peru the upper beds are contorted, faulted, and recemented, probably as a result of disturbance of the sediment before it was consolidated. Such disturbance could be caused by wave action or by slumping of beds deposited on a slope. The Kokomo rests unconformably on Liston Greek, Mississinewa, and Niagaran reefs and has been considered to be Cayugan, but the upper part of the formation may be Devonian. The Kokomo is overlain by the Kenneth limestone or by Middle Devonian limestone.

Kenneth Limestone

The Kenneth limestone is tan to brown, dense, extremely cherty, fossiliferous limestone. Some authors have placed the formation in the Cayugan and others in the Lower Devonian. The Kenneth rests upon the Kokomo and, is overlain by Middle Devonian limestones.
Devonian Limestone (undifferentiated)

The Devonian limestone overlying the Niagaran and Cayugan rocks in northern Indiana is, in most places, gray hard, coarsely crystalline, crinoidal limestone which resembles the Beachwood (Hamilton) of southern Indiana. East of Logansport the lowest exposed Devonian consists of a blue-gray nodular stromatoporoid biostrom. The next higher beds are tan, flaggy, crystalline pure limestone which contains many corals and fenestelloid bryozoa and has an appearance similar to the Spirifer acuminatus zone of the upper Jeffersonville (Onondaga) of southern Indiana.

INDIANA CRUSHED STONE QUARRIES

The quarries listed below are operating or have been at some time during the course of the field examinations. The information in this report was obtained when each quarry was examined and will not reflect changes since that time. For example, a quarry may have been deepened into lower geologic formations than those listed. Changes in the plant facilities or operating methods may have added specialized products not listed here.

A thickness in feet, without other qualification, is given for formations whose top and base are exposed in the quarry listed. The highest formation in a quarry is rarely present in its full thickness, since erosion commonly has removed the upper part. In each case a thickness in feet is given, followed by the statement “Upper part eroded” or similar qualification. In unglaciated areas the formation might be expected to have greater thickness at higher topographic levels. When quarrying has not reached the base of a formation, the word “exposed” follows the thickness given, indicating that deeper quarrying will expose a greater thickness of that formation. Under ground quarries commonly make their entries in old surface quarries.
in hillsides. In such cases formations higher than those now being produced are exposed above the entries. Only the formations and thicknesses which are being mined are indicated.

ADAMS COUNTY

1 Karch Quarry

Location: SW¼W¼, sec. 31, T. 25 N., R. 15 E.
4.5 miles southeast of Geneva

Date of field examination: July 23, 1947
Geologic formation: Huntington - 22 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

2 Meshberger Brothers Stone Company

Location: SE¼ sec. 33, T. 26 N., R. 13 E.
1.5 miles northwest of Linngrove

Date of field examination: July 19, 1947
Geologic formation: Huntington - 38.1 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

3 Meshberger Brothers Stone Company

Location: center sec. 4, T. 26 N., R. 15 E.
3 miles southeast of Pleasant Mills

Date of field examination: July 21, 1947
Geologic formation: Huntington - 25 feet exposed, upper part eroded
Products: crushed stone and agricultural lime

BARTHOLOMEW COUNTY

4 Meshberger Stone Company
BARTHOLOMEW COUNTY, cont'd.
Location: NE¼ sec. 6, T. 8 N., R. 7 E.
2 miles northeast of Elizabethtown
Date of field examination: October 10, 29, 31, 1947
Geologic formations: Beechwood - 3.5 feet thick
Jeffersonville - 35 feet exposed
Products: agricultural lime, road stone, and flux stone

BLACKFORD COUNTY
5 Montpelier Stone Company
Location: SW¼SW¼NW¼ sec. 3, T. 24 N., R. 11 E.
North edge of Montpelier
Date of field examination: July 11, 1947
Geologic formation: Huntington - 34.7 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

CARROLL COUNTY
6 Stuntz-Yoeman Company
Location: SW¼SW¼sec. 19, T. 25 N., R. 2 W.
Near northwest edge of Delphi
Date of field examination: July 26, 1947
Geologic formation: Huntington - 25.2 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

CASS COUNTY
7 France Stone Company
Location: NE¼ sec. 27, T. 27 N., R. 2 E.
2.5 miles east of Logansport
Date of field examination: July 25, 27, 1947
CASS COUNTY, cont'd.

   Geologic formations: Devonian (Jeffersonville?) 26.4 feet, upper part eroded
   Kokomo - 22.5 feet exposed

   Products: crushed stone and agricultural lime

CLARK COUNTY

8 T. J. Atkins Company

   Location: W¼ sec. 10, Clark Military Grant
   1 mile northeast of Clayburg
   Date of field examination: October 21, 1947
   Geologic formations: Silver Creek - 10.1 feet thick, upper part eroded
   Jeffersonville - 28.5 feet exposed
   Products: agricultural lime and crushed road stone

9 Louisville Cement Company

   Location: Grant 132 (and part of 131). Clark Military Survey
   1 mile northeast of Speed
   Date of field examination: October 1, 16, 1947
   Geologic formations: Silver Creek - 13.9 feet thick, upper part eroded
   Speed - 4.5 feet thick
   Jeffersonville - 35.9 feet thick
   Products: crushed stone, agricultural lime, small amount of asphalt filler, raw limestone for
   portland cement and brixment

10 Sellersburg Stone Company

   Location: SE¼W½ Grant 90, Clark Military Survey
   East edge of Sellersburg
   Date of field examination: September 29, 30, 1947
   Geologic formations: Silver Creek - 10.4 feet thick, upper part eroded
CLARK COUNTY, cont’d

  Speed - 1.7 feet thick
  Jeffersonville - 33.3 feet thick
  Louisville - 22.3 feet exposed

  Products: crushed stone and agricultural lime

CRAWFORD COUNTY

11 Hy-Rock Products Company
   Location: NW¼ sec. 7, T. 2 S., R. 2 E.
   Marengo
   Dates of field examination: July 24, 1947
   Geologic formation: Ste. Genevieve - 32 feet being mined
   Note: underground operation

   Products: crushed stone and agricultural lime

12 Mulzer Brothers Quarry
   Location: SW¼NE¼; sec. 10, T. 2 S., R. 2 W.
   3 miles north of Eckerty
   Date of field examination: June 30, 1948
   Geologic formation: Glen Dean - 34 feet exposed

   Products: crushed stone and agricultural lime

DAVIES COUNTY

13 Arvin Quarry
   Location: SW¼NW¼ sec. 16, T. 1 N., R. 5 W.
   1.5 miles north of Portersville
   Date of field examination: July 14, 15, 1948
   Geologic formation: Minshall - 4.8 feet thick

   Products: road stone
DEARBORN COUNTY

14 Bennett Construction Company

Location: SE¾NE¾ sec. 14, T. 7 N., R. 3 W.

3.5 miles northwest of Manchester

Date of field examination: August 8, 1947

Geologic formations: Whitewater - 7.5 feet thick, upper part eroded

Saluda - 4.8 feet exposed

Products: road rock and agricultural lime

15 Dearborn Lime Company

Location: NW¼SW¼, sec. 30, T. 8 N., R. 2 W.

1.5 miles northeast of Weisburg

Date of field examination: August 11, 1947

Geologic formation: Saluda - 18.1 feet exposed, upper part eroded

Products: agricultural lime

DECATUR COUNTY

16 Harris City Stone Company

Location: NE¼SW¼ sec. 28, T. 10 N., R. 9 E.

.5 mile north of Harris City

Date of field examination: July 28, 1948

Geologic formation: Laurel - 27.9 feet exposed, upper part eroded

Products: agricultural lime and road stone

17 Huber-Dorty Quarry

Location: NW¼SE¼ sec. 11, T. 10 N., R. 9 E.

South edge of Greensburg

Date of field examination: August 23, 1947

Geologic formation: Laurel - 54.3 feet thick, thin section eroded from top
DECATUR COUNTY, cont’d.

Products: crushed stone and agricultural lime

18 Layton Quarry
Location: SE\(\frac{1}{4}\)NE\(\frac{1}{4}\) sec. 20, T. 9 N., R. 9 E.
3.25 miles northeast of Westport
Date of field examination: August 25, 1947
Geologic formation: Laurel - 14.2 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

19 New Point Stone Quarry
Location: S\(\frac{1}{2}\)SW\(\frac{1}{4}\)SW\(\frac{1}{4}\) and SE\(\frac{1}{4}\)SE\(\frac{1}{4}\) sec. 7, T. 10 N., R. 11 E.
1 mile north of New Point
Date of field examination: August 21, 1947
Geologic formations:
- Laurel - 16.1 feet thick, upper part eroded
- Osgood - 12.9 feet thick
- Brassfield - 4.5 feet thick
- Whitewater - 3.5 feet exposed
Products: agricultural lime and crushed stone

20 Vail Stone Company
Location: NW\(\frac{1}{4}\)NE\(\frac{1}{4}\) sec. 12, T. 3 N., R. 9 E.
.35 mile east of Sandusky
Date of field examination: September 3, 1947
Geologic formation: Laurel - 18.5 feet exposed
Products: agricultural lime and road rock

DELAWARE COUNTY

21 J. & K. Stone Company
Location: SW\(\frac{1}{4}\), sec. 23, T. 22 N., R. 10 E.
DELAWARE COUNTY, cont'd.

West edge of Eaton

Date of field examination: August 23, 1947
Geologic formation: Huntington - 18.7 feet exposed, upper part eroded
Products: crushed stone and agricultural lime

22 J. & Stone Company

Location: SW¼NE¼ sec. 20, T. 20 N., R. 10 E.
Southwest edge of Muncie
Geologic formation: Liston Creek

Note: not sampled or examined
Products: crushed stone and agricultural lime

23 Muncie Stone and Lime Company

Location: SW¼NE¼ sec. 20, T. 20 N., R. 10 E.
Southwest edge of Muncie
Date of field examination: August 25, 1947
Geologic formation: Liston Creek - 48.2 feet exposed, upper part eroded
Products: crushed stone and agricultural lime

GRANT COUNTY

24 Pipe Creek Stone Company

Location: SE¾ sec 35, T. 25 N., R. 6 E.
2.5 miles west of Sweetser
Date of field examination: July 12, 1947
Geologic formations: Liston Creek - 18.3 feet thick, upper part eroded
Mississinewa - 17.3 feet exposed
Products: crushed stone, agricultural lime, and raw material for rock wool
HARRISON COUNTY

23 Corydon Stone Company
   Location: SE¼SE¼ sec. 25, T. 3 S., R. 3 E.
   Northwest edge of Corydon
   Date of field examination: September 9, 1947
   Geologic formation: St. Louis - 52.1 feet exposed
   Products: road rock and agricultural limestone

26 Corydon Stone Company
   Location: NE¼SW¼ sec. 25, T. 3 S., R. 4 E.
   2.5 miles southwest of Lanesville
   Date of field examination: September 9, 1947
   Geologic formations: Salem - 26.2 feet thick upper part eroded
                        Harrodsburg - 41.5 feet exposed
   Products: agricultural lime and crushed stone

27 Davis Brothers Stone Company
   Location: SE¼SW¼ sec. 15, T. 2 S., R. 3 E.
   1 mile northwest of Ramesy
   Date of field examination: June 30, July 2, 1948
   Geologic formations: Paoli - 5.1 feet thick, upper part eroded
                        Ste. Genevieve - 33 feet exposed
   Products: agricultural limestone and road stone

28 Louisville Cement Company
   Location: NE¼SE¼ sec. 13, T. 2 S., R. 2 E.
   1.5 miles west of DePauw
   Date of field examination: July 28, 1948
   Geologic formation: Paoli - 17.6 feet exposed, upper part eroded
Products: flux stone and raw stone for burned lime

29 Louisville Cement Company

Location: NW¼ sec. 14, T. 2 S., R. 2 E.

Northwest edge of Milltown

Date of field examination: July 31, September 8, 1947

Geologic formations: Ste. Genevieve - 36.6 feet being mined St. Louis - 18.5 feet exposed

Products: raw stone for lime kilns; crushed stone and agricultural lime

30 Harrison County Quarry

Location: NW¼NE¼ sec. 12, T. 5 S., R. 2 E.

1.5 miles east of New Amsterdam

Geologic formations: Paoli - 21 feet exposed, upper part eroded Ste. Genevieve - 10 feet exposed

Note: not sampled or examined

HOWARD COUNTY

31 Kokomo Creek Stone Company

Location: SE¼SE¼NW¼ sec. 17, T. 23 N., R. 4 E.

2 miles southeast of Kokomo

Date of field examination: July 15., 1947

Geologic formations: Kenneth - 4 feet thick, upper part eroded Kokomo 12.4 feet exposed

Products: agricultural lime and crushed stone

HUNTINGTON COUNTY

32 Erie Stone Company

Location: SE¼SW¼ and SW¼SE¼ sec. 12, T. 28 N., R. 9 E.

Eastern edge of Huntington
HUNTINGTON COUNTY, cont'd.

Date of field examination: July 8, 9, 1947

Geologic formation: Liston Creek - 34 feet exposed, upper part eroded

Note: lower part of section possibly Mississinewa

Products: agricultural lime and crushed stone

JACKSON COUNTY

33 Seymour Gravel Company

Location: SE¼SE¼ sec. 29, T. 5 N., R. 3 E.
2 miles northwest of Medora

Date of field examination: June 15, 16, 1948

Geologic formation: Harrodsburg - 25 feet exposed, upper part eroded

Products: agricultural lime and crushed stone

JASPER COUNTY

34 Babcock Construction Company

Location: SE¼SE¼ sec. 30, T. 29 N., R. 6 W.
Southeast edge of Rensselaer

Date of field examination: July 30, 1947

Geologic formation: Devonian (Jeffersonville?) 15.5 feet exposed, upper part eroded

Products: crushed stone and agricultural lime

JAY COUNTY

35 Rockledge Products Company

Location: NW¼ sec. 30, T. 23 N., R. 14 E.
1.5-miles west of Portland

Date of field examination: August 30, 1947

Geologic formation: Huntington - 52.5 feet exposed, upper part eroded

Products: crushed stone and agricultural lime
JEFFERSON COUNTY

36 **Independent Stone Company**

Location: SW¼ sec. 26, T. 5 N., R. 9 E.
13 miles northwest of Wirt
Date of field examination: August 9, 1947

Geologic formations:
- Jeffersonville - 9.2 feet thick, upper part eroded
- Geneva - 15.7 feet thick
- Laurel - 28.5 feet exposed

Products: agricultural lime and crushed stone

JENNINGS COUNTY

37 **Paul Frank Quarry**

Location: NE¼ sec. 34, T. 7 N., R. 8 E.
Northeast edge of North Vernon
Date of field examination: August 28, 1947

Geologic formations:
- Beechwood - 3.4 feet thick
- Speed - 1.7 feet thick
- Jeffersonville - 29.4 feet exposed

Products: crushed stone and agricultural lime

38 **Muscatatuck State School Quarry**

Location: SW¼NE¼ sec. 16, T. 7 N., R. 9 E.
1.5 miles northwest of Butlerville
Date of field examination: July 26, 1948

Geologic formation: Laurel - 36.8 feet exposed

Products: agricultural lime and road rock (all used by institution)

LAWRENCE COUNTY

39 **Heltonville Limestone Company**
LAWRENCE COUNTY, cont'd.

Location: NW¼, sec. 24, T. 6 N., R. 1 E.

1 mile northeast of Heltonville

Date of field examination: July 30, 1947

Geologic formation: Salem (Spalls from company’s building stone mill)

Products: agricultural lime

39A Hostettler Quarry

Location: NW¼SE¼ sec. 31, T. 6 N., R. 2 W.

3.5 miles southwest of Springville

Geologic formation: Ste. Genevieve

Note: not sampled

40 Lehigh Portland Cement Company

Location: S½ sec. 30, T. 4 N., R. 1 E.

2 miles northeast of Mitchell

Date of field examination: June 24, 25, and July 30, 1948

Geologic formations: St. Louis - 10 feet thick, upper part eroded

Salem - 62.7 feet thick

Harrodsburg - 53.9 feet exposed

Products: raw stone for cement manufacture

41 Nally Ballard, and Cato

Location: SE¼NE¼ and NE¼SE¼ sec. 12, T. 3 N., R. 2

.5 mile west of Georgia

Date of field examination: June 30, 1948

Geologic formations: Paoli - 23.6 feet thick

Ste. Genevieve - 44.5 feet exposed

Products: agricultural lime and crushed stone
42 Oolitic Ground Limestone Company

Location: SE\%SE\% sec. 16, T. 5 N., R. 1 W.

1 mile west of Bedford

Date of field examination: June 25, 1948

Geologic formation: Salem - 37.8 feet exposed, upper part eroded

Products: flux stone and agricultural lime

42A Ralph Rogers Company

Location: SE\%SE\% sec. 29, T. 6 N., R. 2 W.

2 miles southwest of Springville

Date of field examination: April 30, May 21, 1949

Geologic formation: Ste. Genevieve - 109.8 feet exposed

Products: crushed stone and agricultural lime

43 Williams Limestone Company

Location: NW\%NE\% sec. 24, T. 5 N., R. 1 W.

East edge of Bedford

Date of field examination: July 8, 12, 1948

Geologic formation: Salem - 20.3 feet being quarried

Products: crushed stone and agricultural lime

MADISON COUNTY

44 Indiana Reformatory Quarry

Location: SW\%SE\% sec. 25, T. 18 N., R. 6 E.

2.5 miles southwest of Pendleton

Date of field examination: August 28, September 1, 1947

Geologic formation: Liston Creek - 51.7 feet exposed, upper part eroded

Products: crusted stone and agricultural lime
MADISON COUNTY, cont’d.

45 Standard Materials Corporation

Location: E½NW¼ and W½NE¼ sec. 28, T. 19 N., R. 9 E.
Northwest corner of Lapel
Date of field examination: August 27, 28, 1947
Geologic formation: Liston Creek - 20.9 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

MARTIN COUNTY

46 Gerkin Quarry

Location: W½NW¼ sec. 12, T. 3 N., R. 4 W.
2.6 miles northwest of Shoals
Date of field examination: July 11, 1947
Geologic formation: Glen Dean - 26.8 feet exposed
Products: crushed stone and some agricultural lime

47 Mt. Olive Quarry

Location: NE¼SE¼ sec. 1, T. 4 N., R. 3 W.
2 miles west of Williams
Date of field examination: July 15, 16, 1948
Geologic formation: Ste. Genevieve - 36.1 feet exposed
Products: crushed stone

MONROE COUNTY

48 Bloomington Crushed Stone Company

Location: SW¼NW¼, sec. 28, T. 9 N., R. 1 W.
.5 mile north of Bloomington
Date of field examination: July 13, 1948
Geologic formations: Salem - 15.6 feet thick, most of formation eroded
Harrodsburg - 39.9 feet exposed
Products: crushed stone and agricultural lime

49 Quimby and Stephen Quarry
Location: SW¼SE¼ sec. 6, T. 7 N., R. 2 W.
2.8 miles south of Stanford
Date of field examination: June 17, 18, 1948
Geologic formations: Beaver Bond - 14.5 feet thick
Paoli - 15.4 feet thick
Aux Vases - 8.4 feet thick
Ste. Genevieve - 25.4 feet exposed
Products: agricultural lime and road stone

MONTGOMERY COUNTY

50 New Ross Limestone Company
Location: NE¼NE¼ sec. 3, T. 17 N., R. 3 W.
1.5 miles southwest of New Ross
Date of field examination: August 7, 1947
Geologic formation: Borden (reef) - 13.6 feet thick, upper part eroded
Products: mostly agricultural lime, some crushed stone

51 Waveland Stone Company
Location: SE¼SW¼ sec. 34, T. 17 N., R. 6 W.
2 miles southwest of Waveland
Date of field examination: August 8, 1947
Geologic formation: St. Louis? - 30.2 feet quarried
Note: identification tentative. May be Harrodsburg.
Products: crushed stone and agricultural lime
NEWTON COUNTY

52 Newton County Stone Company

Location: NW¼NW¼NE¼ sec. 25, T. 27 N., R. 9 W.

2.5 miles east of Kentland

Date of field examination: July 31, August 1, 1947

Geologic formations: Middle Ordovician limestones and dolomites (depth of quarry 105 feet)

Products: crushed stone and agricultural lime

ORANGE COUNTY

53 Calcar Quarry

Location: SE¼SE¼ sec. 6, T. 1 N., R. 1 E.

1 mile southeast of Paoli

Date of field examination: June 23, 24, 1948

Geologic formations: Paoli - 30.2 feet thick

 Aux Vases - 4.3 feet thick

Ste. Genevieve - 67.1 feet exposed

Products: agricultural lime and road stone

54 Cave Stone Quarry

Location: NW¼SE¼ sec. 29, T. 2 N., R. 1 W.

3.5 miles northwest of Paoli

Date of field examination: July 1, 1948

Geologic formation: Ste. Genevieve - 51.3 feet exposed, upper part eroded

Products: agricultural lime and crushed stone

55 Radcliff and Berry, Inc.

Location: SW¼SE¼ sec. 24, T. 3 N., R. 1 W.

1 mile northwest of Orleans
Date of field examination: June 28, July 1, 1948

Geologic formations: Paoli - 14.9 feet thick, upper part eroded
    Aux Vases - 3 feet thick
    Ste. Genevieve - 70 feet exposed

Products: agricultural lime, crushed stone, aggregate for blocks and other concrete products

56 Thacker Quarry

Location: NE¼NW¼ sec. 33, T. 2 N., R. 1 W.
    2.6 miles west of Paoli

Date of field examination: June 25, 1948

Geologic formations: Paoli - 17.7 feet thick, upper part eroded
    Ste. Genevieve - 56.2 feet exposed

Products: agricultural lime and road stone

OWEN COUNTY

57 Dunn Limestone Company, Inc.

Location: NE¼NW¼ sec. 10, T. 10 N., R. 3 E.
    3.5 miles northeast of Spencer

Date of field examination: July 21, 22, 1948

Geologic formations: St. Louis - 18.9 feet thick, upper part eroded
    Salem - 39.8 feet exposed

Products: agricultural lime

58 Hahn Brothers Quarry

Location: NW¼NE¼ sec. 6, T. 8 N., R. 4 W. miles
    southwest of Freedom

Date of field examination: July 21, 1948

Geologic formation: Beech Creek - 18.5 feet exposed
OWEN COUNTY, cont’d.

Product: agricultural lime

59 Midwest Rock Products Corporation

Location: NE¼ sec. 30, T. 10 N., R. 3 W.

1 mile southwest of Spencer

Date of field examination: July 8, 1948

Geologic formation: Ste. Genevieve - 50.8 feet exposed (upper few feet eroded)

Products: crushed stone and agricultural lime

60 Winders and Sons Quarry

Location: NW¼NE¼ sec. 24 and SW¼SE¼ sec. 13, T. 10 N., R. 4 W.

1.6 miles northwest of Spencer

Date of field examination: July 19, 1948

Geologic formation: Ste. Genevieve - 32 feet exposed (upper part eroded)

Products: agricultural lime and crushed stone

PERRY COUNTY

61 James Quarry

Location: SE¼SW¼ sec. 6, T. 5 S., R. 1 W.

1.5 miles east of Leopold

Date of field examination: July 27, 1948

Geologic formation: Glen Dean - 22.4 feet exposed

Products: agricultural lime and crushed stone

62 Lutgring and Sons Quarry

Location: NE¼ sec. 18, T. 4 S., R. 1 W.

.6 mile east of Branchville

Date of field examination: July 23, 1947
Geologic formation: Glen Dean - 23.9 feet thick Products: agricultural lime and road stone

63 Schueler Quarry
Location: NW¼SE¼ sec. 32, T. 5 S. R. 1 W.
1 mile northeast of Derby
Date of field examination: July 16, 26, 1948
Geologic formation: Glen Dean - 28 feet exposed Products: agricultural lime and crushed stone

PUTNAM COUNTY
64 Indiana State Farm Quarry
Location: NW¼SW¼ sec. 17, T. 13 N., R. 4 W.
1 mile southwest of Putnamville
Date of field examination: August 20, 1947
Geologic formation: Ste. Genevieve - 83.9 feet thick, upper part eroded
Products: agricultural lime and small amount of crushed stone

65 Lone Star Cement Company
Location: junction of secs. 28, 29, 32, and 33, T. 14 N., R. 4 W.
25 mile southeast of Limestone
Date of field examination: August 14, 15, 1947
Geologic formation: Ste. Genevieve - 47.9 feet exposed, upper part eroded
Product: raw limestone for manufacture of Portland cement

66 Ohio and Indiana Stone Company
Location: junction of secs. 19, 20, 29, and 30, T. 14 N., R. 4 W.
1 mile southeast of Greencastle
Date of field examination: August 12, 13, 1947
OHIO COUNTY cont’d.

Geologic formation: Ste. Genevieve - 53.4 feet exposed, upper part eroded

Products: crushed stone, agricultural lime, and high-calcium limestone dust

67 Russelville Stone Company

Location: NW¼SE¼, sec. 8, T. 16 N., R. 5 W. .5 mile south of Russelville

Date of field examination: August 9, 1947

Geologic formation: Harrodsburg? - 20.7 feet exposed, upper part eroded.

Note: identification tentative

Products: agricultural lime and crushed stone

RANDOLPH COUNTY

68 H. and R. Stone Company

Location: SE¼NE¼SE¼ sec. 12, T. 21 N., R. 13 E.

.5 mile southeast of Ridgeville

Date of field examination: August 31, 1947

Geologic formation: Huntington - 17.6 feet exposed, upper part eroded

Products: agricultural lime and crushed stone

69 M. D. & R. Stone Company

Location: SE¼NE¼ sec. 10, T. 21 N., R. 12 E.

1.5 miles southeast of Fairview

Date of field examination: August 29, 1947

Geologic formation: Huntington - 21.1 feet exposed, upper part eroded

Products: agricultural lime and crushed stone

RIPLEY COUNTY

70 Bultman Quarry
Location: SW¼SW¼ sec. 3, T. 7 N., R. 10 E.
1 mile west of Holton
Date of field examination: September 23, 1947
Geologic formation: Laurel - 21.3 feet exposed, upper part eroded
Products: crushed stone and agricultural lime

71 Cord Stans Company
Location: SE¼NW¼ sec. 26, T. 7 N., R. 11 E.
2.8 miles southwest of Versailles
Date of field examination: August 12, 1947
Geologic formation: Laurel - 28.8 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

72 Napoleon Lime Industry
Location: NE¼NE¼ sec. 29, T. 9 N., R. 11 E.
.5 mile east of Napoleon
Date of field examination: August 14, 1947
Geologic formation: Laurel - 19.7 feet exposed, upper part eroded
Product: crushed stone

73 Ripley County Construction Company
Location: W½SW¼ sec. 22, T. 8 N., R. 11 E.
South edge of Osgood
Date of field examination: August 13, 1947
Geologic formation: Laurel - 20.5 feet exposed, upper part eroded
Products: road stone and agricultural lime

RUSH COUNTY
74 McCorkle Stone Company
RUSH COUNTY, cont'd.

Location: NW¼NW¼ sec. 17, T. 12 N., R. 9 E.
4 miles west of Milroy
Date of field examination: July 15, 1947
Geologic formation: Geneva - 23.7 feet exposed, upper part eroded
Products: agricultural lime and crushed stone

75 Rush County Stone Company
Location: W½SE¼ sec. 18, T. 12 N., R. 9 E.
West edge of Moscow
Date of field examination: September 3, 1947
Geologic formation: Geneva - 23 feet exposed, upper part eroded
Products: crushed stone and agricultural lime

SCOTT COUNTY

76 Scott County Stone Company
Location: SE¾ sec. 20, T. 3 N., R. 8 E.
2 miles south of Blocher
Date of field examination: August 27, 1947
Geologic formations: Beechwood - 4.9 feet thick
        Silver Greek - 4.9 foot thick
        Speed - 3.3 feet thick
        Jeffersonville - 40 feet exposed
Products: agricultural lime and crusted stone

SHELBY COUNTY

77 Burke Stone Company
Location: SW¼SE¼ sec. 29, T. 11 N., R. 7 E.
West edge of Norristown
Date of field examination: August 15, 1947
Geologic formation: Geneva - 20.2 feet exposed, upper part eroded
Product: agricultural lime

Cave Stone Company
Location: SW¼NW¼ sec. 22, T. 11 N., R. 7 E.
1 mile west of Geneva
Date of field examination: July 28, 1948
Geologic formation: Geneva - 16.3 feet exposed, upper part eroded
Products: agricultural lime and road stone

St. Paul Stone Company
Location: NE¼NW¼ sec. 9, T. 11 N., R. 8 E.
.4 mile southwest of St. Paul
Date of field examination: September 2, 3, 1947
Geologic formation: Laurel - 27.7 feet exposed, upper part eroded
Products: agricultural lime and road stone

Kixmiller Brothers Quarry
Location: SE¼SW¼, sec. 28, T. 6 N., R. 8 W.
3 miles north of Freelandville
Date of field examination: July 21, 1947
Geologic formation: Maria Creek - 4.9 feet thick
Products: agricultural lime

Leatherbury Brothers Quarry
Location: SW¼ sec. 9, T. 5 N., R. 12 E.
1.5 miles northwest of Pleasant
SWITZERLAND COUNTY cont'd.
  Date of field examination: September 22, 1947
  Geologic formation: Whitewater - 9.3 feet exposed, upper part eroded
  Products: agricultural lime and crushed stone

WABASH COUNTY

82 Celotex Quarry
  Location: NE\(\frac{1}{4}\)NE\(\frac{3}{4}\)NE\(\frac{1}{4}\) sec. 3, T. 27 N., R. 7 E.
   1 mile south of Lagro
  Date of field examination: July 3, 5, 1947
  Geologic formation: Mississinewa - 48.6 feet exposed, upper part eroded
  Product: shale for manufacture of rock wool

83 National Rock Wool Sales, Inc.
  Location: NE\(\frac{1}{4}\)NW\(\frac{1}{4}\)NE\(\frac{1}{4}\) sec. 3, T. 27 N., R. 7 E.
   1 mile south of Lagro
  Date of field examination: July 4, 5, 1947
  Geologic formation: Mississinewa - 24.8 feet exposed
  Product: raw shale for manufacture of rock wool

WASHINGTON COUNTY

84 Hoosier Lime and Stone Company
  Location: NE\(\frac{1}{4}\) sec. 24, T. 2 N., R. 3 E.
   .7 mile west of Salem
  Date of field examination: August 19, September 9, 1947
  Geologic formation: Salem - 40.5 feet exposed, upper part eroded
  Products: agricultural lime and road stone

85 Ralph Rogers Company
Location: NW¼SE¼ sec. 20, T. 2 N., R. 4 E.
1 mile south of Salem
Geologic formation: Harrodsburg limestone
Product: road stone (on demand)

Note: not sampled or examined

86 Washington County Quarry
Location: NW¼SW¼ sec. 13, T. 2 N., R. 3 E.
2 miles east of Livonia
Date of field examination: June 28, 1948
Geologic formations: Paoli - 7.4 feet thick, upper part eroded
Ste. Genevieve - 43.6 feet exposed
Products: road stone

WAYNE COUNTY
87 DeBolt Quarry
Location: NE¼SW¼ sec. 11, T. 13 N., R. 1 W.
3 miles southeast of Richmond
Date of field examination: November 12, 1947
Geologic formation: Elkhorn - 15.2 feet exposed, upper part eroded
Products: agricultural lime and road stone

WELLS COUNTY
88 Erie Stone Company
Location: NW¼ sec. 28, T. 27 N., R. 12 E.
1.5 miles north of Bluffton
Date of field examination: July 16, 1947
Geologic formation: Liston Creek - 38.7 feet exposed, upper part eroded
Products: agricultural lime and crushed stone
WHITE COUNTY

**Monon Crushed Stone Company**

- **Location**: SE¼NE¼ sec. 28, T. 28 N., R. 4 W.
- **1 mile south of Monon**
- **Date of field examination**: July 29, 1947
- **Geologic formation**: Huntington - 85 feet exposed, upper part eroded
- **Products**: agricultural lime and crushed stone

**ANALYSES**

All determinations in the following tables, except those of carbon dioxide, were made in the spectrographic laboratory of the Division of Geology by Mr. R. K. Leininger. The carbon dioxide determinations were run chemically by Mr. Maynard Coller. All samples were run in duplicate or triplicate.

The numbers in the column headed "Quarry" refer to the quarries on the map (Plate 1). Formations are arranged alphabetically. The samples are placed in the same order and vertical relationship that they had in the quarry wall. The word "total" in parentheses after the thickness of a sample indicates that the sample represents all of the formation exposed or quarried.

Chip samples were used for all the analyses except one, No. P4836. Chip sampling was done by removing small chips of rock from the quarry face in such a way as to give nearly continuous samples from the bottom to the top of the rock unit. The chips were taken from unweathered surfaces and were kept free of clay and other contamination. Chips of equal size were taken from equal thicknesses of rock within a given unit.
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<thead>
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<th>Formation</th>
<th>Quarry</th>
<th>Sample Number</th>
<th>Thickness</th>
<th>CaCO₃</th>
<th>MgCO₃</th>
<th>Al₂O₃</th>
<th>Fe₂O₃</th>
<th>SiO₂</th>
<th>TiO₂</th>
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<tr>
<td>Aux Vases</td>
<td>49</td>
<td>P4829</td>
<td>Upper 6.6 feet</td>
<td>61.1</td>
<td>2.44</td>
<td>4.87</td>
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<td>P4827</td>
<td>Lower 1.8 feet</td>
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<td>32.5</td>
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<td>P4836</td>
<td>*Rock sample 6.8 feet</td>
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<td>0.59</td>
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<td>P48153</td>
<td>Upper 9.8 feet</td>
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<td>Lower 8.7 feet</td>
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<td>2.22</td>
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* From base of 14.5 feet thickness
## Analyses of Limestones Quarried in Indiana, cont’d.

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ADDENDA

The following quarries, which came to the attention of the author after this report was in an advanced stage of publication, do not appear on the map:

HARRISON COUNTY

Carl Mathes Quarry
Location: SW¼NE¼ sec. 13, T. 4 S., R. 3 S.
3 miles south of Corydon

Geologic formation: Ste. Genevieve
Products: crushed stone and agricultural lime
Note: not sampled

PULASKI COUNTY

Franceville Stone Company
Location: NE¼SW¼ sec. 21, T. 29 N., R. 4 W.
2.5 miles south of Franceville

Geologic formation: Huntington
Products: crushed stone and agricultural lime
Note: not sampled

WELLS COUNTY

Heller Stone Company
Location: sec. 29, T. 27 N., R. 11 E.
7 miles west and 1 mile north from Bluffton

Geologic formation: Liston Creek
Products: crushed stone and agricultural lime
Note: not sampled or examined